

3.48
R3

$$30 = T_k + T_{k+1} =$$

$$(*) \quad 30 = \binom{12}{k-1} X^{\frac{12-k+1}{6}} X^{-\frac{1}{2}(k-1)} (-1)^{k-1} + \binom{12}{k} X^{\frac{12-k}{6}} X^{-\frac{1}{2}k} (-1)^k$$

$$2\left(2 - \frac{2k}{3}\right) = \frac{8}{3} - \frac{2k}{3}$$

$$\frac{4}{3} = \frac{2k}{3} \rightarrow \boxed{k=2}$$

$$30 = \binom{12}{1} (-1)^1 X^{\frac{11}{6}} + \binom{12}{2} (-1)^2 X^{\frac{10}{6}} \quad (*) \text{ nbnbnf 013}$$

$$30 = -12A^2 + 66A \quad /:6 \quad A = X^{\frac{2}{3}}$$

$$2A^2 - 11A + 5 = 0$$

$$A_1 = 5 \quad X^{\frac{2}{3}} = 5 \rightarrow X = \sqrt[3]{125}$$

$$A_2 = \frac{1}{2} \quad X^{\frac{2}{3}} = \frac{1}{2} \rightarrow X = \sqrt[3]{\frac{1}{8}} = \frac{\sqrt[3]{2}}{4}$$